REMARKS/ARGUMENTS

Claims 1-20 stand rejected under 35 U.S.C. 102(e) as being anticipated by United States Patent Application Publication No. 2005/0123282 by Novotny, et al. ("Novotny").

Claims 1-20 have been amended with a view to better defining the invention, to correct typographical errors, and to correct antecedence. No new matter has been entered by these amendments. Consequently, the Examiner is respectfully requested to consider the amended claims in view of the following comments.

For reference, amended Claim 1 recites the following:

> 1. (Currently Amended) A method for predicting motion vectors associated with blocks of pixels of a picture to be included in a data stream for differential motion vector coding of a video signal, said method comprising the steps of:
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> organising a set of reference pictures into a pair of lists and according to each reference picture within said lists at least one reference index;
>
> associating with selected ones of said blocks in said video signal at least one motion vector that references a respective one of said lists, each vector associated with a selected one of the blocks referencing a different list of said lists, each vector defining disposition of said selected one of the blocks relative to a reference picture in the respective one of said lists; and,
>
> computing a predicted value for a current vector of said vectors for a current block from vectors of adjacent blocks referencing a same list of reference pictures as the current vector, wherein prediction of a motion vector that selects a reference picture using a first list of reference pictures is not dependent upon motion vectors whose reference pictures are selected using a second list of reference pictures.

On page 3 of the Office Action the Examiner cites Novotny against previous Claim 1 stating (underlining added by the Applicant):

> "Novotny discloses a method of predicting motion vectors associated with a block of pixels of a picture to be included in a data stream for differential motion vector coding of a video signal (Novotny: paragraph [0104, claim 23), said method comprising the steps of: organizing a set of reference pictures in to a pair of lists and according to each reference picture within said lists at least one reference index (Novotny: paragraph [0066, lines 1-8); associating with selected ones of said blocks in said video signal at least one motion vector that references a respective one of said lists, with each vector associated with a selected one of the blocks referencing a different list (Novotny: paragraph [0037, lines 1-18), each of which vectors defines disposition of said block relative to a reference picture in the respective one of said lists, and computing a predicted value for each of said vectors from vectors of adjacent blocks referencing the same list as the vector being computed (Novotny: paragraph [0026, lines 1-13), whereby, the prediction of a motion vector that selects a reference picture using a certain list of pictures is not dependent upon the motion vectors whose reference pictures are selected using the other list of reference pictures (Novotny: paragraph [0076], lines 1-8), as in claim 1."

For reference, the selections from Novotny, cited by the Examiner above, recite the following (context and underlining added by the Applicant):

> "**[0026]** Predicted pictures (e.g., P-pictures or P-frames) and bi-predictive pictures (e.g., B-pictures or B-frames) may be referred to as inter coded. Inter coding techniques are generally applied for motion estimation and/or motion compensation (e.g., compression using temporal redundancy). P-pictures and B-pictures may be coded with forward prediction from references comprising previous I and P pictures. For example, the B-picture **74**b and the P-picture **74**c may be predicted using the I-picture **74**a (e.g., as indicated by the arrows **76** and **78**, respectively). The B-pictures may also be coded with (i) backward prediction from a next I or P-reference picture (e.g., the arrow **80**) or (ii) interpolated prediction from both past and future I or P-references (e.g., the arrows **82**a

and **82**b, respectively). However, portions of P and B-pictures may also be intra coded or skipped (e.g., not sent at all). When a portion of a picture is skipped, the decoder generally uses the associated reference picture to reconstruct the skipped portion with no error."

"**[0037]** The present invention generally provides a graphical display of syntax elements as well as other bitstream parameters and statistics overlaid upon the decoded video frames. Each encoded picture generally consists of 16x16 blocks of pixel data called macroblocks. However, other size macroblocks may be implemented accordingly to meet the design criteria of a particular application. The present invention generally overlays macroblock syntax elements that may include but are not limited to: macroblock type, sub-macroblock types and prediction directions; macroblock encoded size; macroblock quantization parameter; macroblock reference index; macroblock motion vectors; macroblock adaptive field/frame (MBAFF) structure; macroblock pixel values; macroblock frequency coefficients. In addition to the macroblock variables, a macroblock type histogram and a macroblock grid may also be overlaid. In general, the present invention facilitates the correlation of the macroblock syntax elements to the video content by presenting the bitstream syntax information in such a manner that the information may be displayed over the corresponding decoded video."

"**[0066]** The color-coding for inter predicted macroblocks (except for the Direct 8x8 type) may, in one example, depend upon the prediction direction. Blocks coded in Inter16x16, Inter16x8, Inter8x16 macroblocks and all sub-partitions in Inter8x8 type (except for the Direct8x8 type) may be predicted using list**0**, list**1** or both lists. The prediction list generally represents, which reference frame out of two choices (list**0** and list**1**) is used to predict a bi-predictive macroblock or a sub-partition. In one example, all blocks predicted using list**0** may be displayed in one color (e.g., red), all blocks predicted using list**1** may be displayed in another color (e.g., blue color), and all blocks predicted using both list**0** and list**1** may be displayed in yet another color (e.g., purple color)."

"**[0076]** The reference index **192** generally specifies the index of the reference frame that is used to predict a macroblock partition or sub-partition. At least one reference index is generally transmitted for every inter coded 16x16, 16x8, 8x16 block and every inter coded 8x8 sub-partition. In one example, the list**0** reference index of the top-left block in a macroblock, if present in the bitstream, may be displayed as an integer number (e.g., 0, 1, etc.). The list**1** reference indices may also be displayed accordingly."

"**[0104]**...23. A method for analyzing a decoded video signal comprising the steps of: generating a decoded video signal and syntax elements in response to encoded bitstream; and generating one or more overlay images in response to said syntax elements, wherein said one or more overlay images comprise one or more graphic symbols representing said syntax elements of said encoded bitstream."

Also, please consider paragraphs 0002-0004 of Novotny which recite the following (underlining added by the Applicant):

"BACKGROUND OF THE INVENTION...**[0002]** H.264 (also called MPEG-4 part 10) is an emerging video coding standard. Because the syntax of an H.264 bitstream is significantly more complex than any other previous video coding standard, such as MPEG-2 or MPEG-4 part 2, existing approaches for visualizing bitstream elements cannot be used. An existing implementation of an H.264 decoder published by the MPEG group (called the JM code) has trace file functionality. The trace file functionality produces a text file containing information about the syntax elements of the bitstream. Because the trace file generated by the JM code is in a text format, working with the information can be very difficult. Correlating the bitstream syntax elements in the text file with the decoded video for verifying that specific syntax elements were used at specific locations in the decoded video can be especially difficult....**[0003]** A solution that allows correlation of H.264 bitstream syntax elements with specific locations in the decoded video would be desirable."

"SUMMARY OF THE INVENTION...**[0004]** The present invention concerns an apparatus comprising a first circuit and a second circuit. The first circuit may be configured to generate

a decoded video signal and syntax elements in response to an encoded bitstream. The second circuit may be configured to generate one or more overlay images in response to the syntax elements. The overlay images generally comprise graphical symbols representing the syntax elements of the encoded bitstream...**[0005]** The objects, features and advantages of the present invention include providing graphical symbols for H.264 bitstream syntax elements that may (i) use simple color coded symbols to display bitstream syntax elements, (ii) overlay the symbols on the decoded video, (iii) simultaneously display both decoded video and the associated bitstream syntax elements, (iv) use different shapes and/or colors to express bitstream elements, and/or (v) be used with previous and future encoding formats"

First, Novotny does not pertain to the subject matter of amended Claim 1. The Applicant's amended Claim 1 is directed toward a method of predicting motion vectors associated with blocks of pixels of a picture to be included in a data stream for differential motion vector coding of a video signal. In contrast, as stated in paragraphs 0004, 0005, and 0104 of Novotny quoted above, Novotny is directed toward a method of analyzing a decoded video signal by generating one or more overlay images having graphic elements that represent syntax elements in the decoded video signal. Thus, the Applicant's amended Claim 1 is directed toward motion vector prediction while Novotny is directed toward the graphic display of syntax elements in decoded video signals.

In particular, the only commonality between the subject matter of amended Claim 1 and Novotny is that they are both related to video signals and that they make use of motion compensation from reference pictures which may be organized into a pair of lists of reference pictures (i.e., list0, list1). However, they differ in that Novotny takes such a video signal and provides a graphical display of semantic information within that signal while the method recited in the Applicant's amended Claim 1 may be used to actually generate the syntax of the signal.

Novotny describes an apparatus to decode a video signal and its syntax elements and then generate graphical overlay images based on the values of the syntax elements. Novotny discusses different lists of reference pictures (i.e., list0, list1) and their reference indices only for the purpose of color coding the locations on a graphical display that makes use of a prediction from each list (see paragraph 0066 of Novotny) or for displaying the reference index number (see paragraph 0076 of

Novotny). These operations relate merely to displaying information concerning the contents of the video signal. They do not at all specify the characteristics of the video signal.

On the other hand, the Applicant's amended Claim 1 recites a specific method for generating predicted motion vector values for blocks of pixels in a video signal (where reference pictures are organized into a pair of lists) for the purpose of the efficient representation of motion vectors using differential coding. Such coded motion vectors (using prediction as recited in amended Claim 1) can be displayed using the method of Novotny but they cannot be generated using the method of Novotny.

Second, all paragraph 0066 of Novotny teaches is that blocks predicted using different lists may be displayed in different colors. Consider the following selection form paragraph 0066 of Novotny: "In one example, all blocks predicted using list**0** may be displayed in one color (e.g., red), all blocks predicted using list**1** may be displayed in another color (e.g., blue color), and all blocks predicted using both list**0** and list**1** may be displayed in yet another color (e.g., purple color)." As such, paragraph 0066 of Novotny does not teach or suggest that element of amended Claim 1 that recites: "organising a set of reference pictures into a pair of lists and according to each reference picture within said lists at least one reference index".

Third, all paragraph 0037 of Novotny teaches is that syntax elements of decoded video frames may be graphically displayed. Consider the following selection from paragraph 0037: "The present invention generally provides a graphical display of syntax elements as well as other bitstream parameters and statistics overlaid upon the decoded video frames...In general, the present invention facilitates the correlation of the macroblock syntax elements to the video content by presenting the bitstream syntax information in such a manner that the information may be displayed over the corresponding decoded video." As such, paragraph 0037 of Novotny does not teach or suggest that element of amended Claim 1 that recites: "associating with selected ones of said blocks in said video signal at least one motion vector that references a respective one of said lists, each vector associated with a selected one of the blocks referencing a different list of said lists".

Fourth, all paragraph 0026 of Novotny teaches is that pictures may be predicted using previous pictures. Consider the following selection form paragraph 0026 of Novotny: "P-pictures and B-pictures may be coded with forward prediction from references comprising previous I and P pictures.". As such, paragraph 0026 of Novotny does not teach or suggest those elements of amended Claim 1 that recite: "each vector defining disposition of said selected one of the blocks relative to a reference picture in the respective one of said lists; and, computing a predicted value for a current vector of said vectors for a current block from vectors of adjacent blocks referencing a same list of reference pictures as the current vector".

Fifth, all paragraph 0076 of Novotny teaches is that a reference index may be displayed as an integer number. Consider the following selection from paragraph 0076 of Novotny: "In one example, the list**0** reference index of the top-left block in a macroblock, if present in the bitstream, may be displayed as an integer number (e.g., 0, 1, etc.). The list**1** reference indices may also be displayed accordingly." As such, paragraph 0076 of Novotny does not teach or suggest that element of amended Claim 1 that recites: "wherein prediction of a motion vector that selects a reference picture using a first list of reference pictures is not dependent upon motion vectors whose reference pictures are selected using a second list of reference pictures".

For the reasons given above, the Applicant believes that amended Claim 1 is patentable over Novotny as this reference does not teach or suggest the subject matter of this claim. In addition, the Applicant believes that amended Claims 2-20, being dependent on amended Claim 1, and adding patentable features thereto, are also patentable.

No new subject matter has been introduced by the above amendments.

The Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

McCarthy Tétrault LLP

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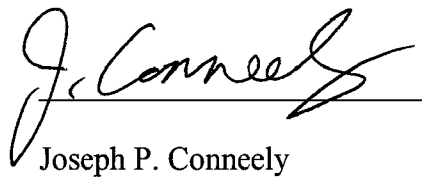
By 

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